

ABSTRACT
PROTECTOR FOR AN OPTICAL FIBER PROBE

The invention presents modifications of a protector design for an optical fiber probe
5 intended for studying an object. The object being studied can be a biological tissue, namely, a
biological tissue of a living body, for example, an internal cavity of a living body. The invention
ensures an effective optical contact between an end face of a distal part of the optical fiber probe
and the object being studied. In a preferred embodiment the later is achieved by designing an
inner surface of a protector window capable of forming a temporary adhesive contact with the
10 end face of the distal part of the optical fiber probe under a pressure of an axial force exerted on
the optical fiber probe placed inside a sheath. Herewith, an outer surface of the protector window
is designed capable of forming a temporary adhesive contact with the object being studied under
the pressure of the axial force exerted on the optical fiber probe placed inside the sheath. To
accomplish this in one embodiment the protector window is made of a pliable and resilient
15 material, for example, of a cured optical gel. In another embodiment the protector window is
configured as at least a bilayer structure. Additionally, in a preferred embodiment the layers, one
of whose surfaces form either the inner or the outer surface of the protector window, are made of
a pliable and resilient material, such as a cured optical gel. This prevents the protector window
from sliding over the surface of the object being studied and at the same time ensures an
20 effective optical contact between the end face of the distal part of the optical fiber probe and the
object being studied. The cured optical gel can be jelly-like or rubber-like. The values of the
refractive indexes of the protector window material at the operating wavelength or at least of the
layer facing the interior cavity of the sheath and of the layer, one of whose surfaces forms the
outer surface of the protector window, are chosen taking into account the values of refractive
25 indexes of the distal part of the optical fiber probe and of the object being studied.